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DONALD R. ANTONELLI  
MELVIN KRAUS  
WILLIAM I. SOLOMON\*  
GREGORY E. MONTONE  
RONALD J. SHORE  
DONALD E. STOUT  
ALAN E. SCHIAVELLI  
CARL I. BRUNDIDGE\*  
PAUL J. SKWIERAWSKI\*  
HUNG H. BUI\*  
ALFRED A. STADNICKI\*  
FREDERICK D. BAILEY

LAW OFFICES  
**ANTONELLI, TERRY, STOUT & KRAUS, LLP**

SUITE 1800  
1300 NORTH SEVENTEENTH STREET  
ARLINGTON, VIRGINIA 22209

TELEPHONE (703) 312-6600  
FACSIMILE (703) 312-6666  
[mkraus@antonelli.com](mailto:mkraus@antonelli.com)

OF COUNSEL  
DAVID T. TERRY  
HAROLD A. WILLIAMSON\*  
RALPH T. WEBB\*  
STERLING W. CHANDLER\*  
PATENT AGENT  
LARRY N. ANAGNOS

\*ADMITTED OTHER THAN VA

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
**Attention: Examiner W. Young**  
**Art Unit: 2652**

**August 25, 2004**

Re: **METHOD AND APPARATUS FOR OPTICAL RECORDING AND  
REPRODUCING WITH TRACKING SERVO REDUCING TRACK OFFSET**  
U.S. Application No.: 10/633,655  
Attorney Docket No.: 501.26379R00

**SUBMISSION OF DOCUMENTS**

Sir,

Applicants hereby submit the attached "Substitute Supplemental Amendment" (2 pgs) and replacement page containing columns 5 and 6 (1 pg), in the above-identified application.

**CERTIFICATE OF TRANSMISSION:**

I hereby certify that the attached "Substitute Supplemental Amendment" (2 pgs) and replacement page containing columns 5 and 6, is being formally filed in the USPTO via Group 2652; Examiner W. Young; Facsimile No. 703-872-9306 on **August 25, 2004**.

  
Melvin Kraus

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501.26379R00

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): KAKU, et al  
Serial No.: 10/633,655  
Filed: August 5, 2003  
For: METHOD AND APPARATUS FOR OPTICAL RECORDING  
AND REPRODUCING WITH TRACKING SERVO REDUCING  
TRACK OFFSET  
Group: 2652  
Examiner: W. Young

**SUBSTITUTE SUPPLEMENTAL AMENDMENT**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

August 25, 2004

Sir:

In light of the telephone discussion of this date with the Examiner, Mr. Young, it is requested that this Substitute Supplemental Amendment be substituted for the Supplemental Amendment filed July 26, 2004 which has not been entered in this application.

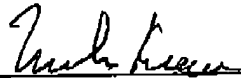
Attached hereto is a replacement page representing columns 5 and 6 of U.S. Patent No. 5,105,409, in which the strike-through portions of claims 1, 5 and 8 as originally submitted on August 5, 2003 have been changed to bracketed portions to conform to the requirements for reissue. Accordingly, it is requested that the replacement page be substituted for columns 5 and 6.

Again, it is requested that the Amendment filed July 26, 2004 be disregarded and the present amendment substituted therefor, which amendment is considered to

overcome the informalities noted by the Examiner and therefore, issuance of the reissue patent is respectfully requested.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (501.26379R00) and please credit any excess fees to such deposit account.

Respectfully submitted,



Melvin Kraus  
Registration No. 22,466  
ANTONELLI, TERRY, STOUT & KRAUS, LLP

MK/cee  
Attachment  
(703) 312-6600

5

lean can be maintained constant. Thus, in the write mode, the gain change-over signal applied from the signal processing circuit 9 is turned into its high level to turn off the analog switch AS, and the gain  $G_w$  is decreased to  $G_w = 1 + (R_3/R_2 + R_4)$ .

FIG. 5 shows the practical structure of the amplifiers 20 and 21. Referring to FIG. 5, the outputs of the amplifiers 18 and 19 are applied to the amplifiers 20 and 21 respectively, and a timing pulse generating circuit 24 shown in FIG. 1 applies an extracting pulse signal to the amplifiers 20 and 21 to extract the writing pulse parts contained in the outputs of the amplifiers 18 and 19. Extraction of the writing pulse parts will be described with reference to FIG. 3 again. FIG. 3(e) shows the waveform of the extracting pulse signal applied from the timing pulse generating circuit 24. It will be seen in FIG. 3(e) that the pulse width of each extracting pulse is such that the pulse width of each writing pulse is suitably extended taking into account the frequency characteristic of the TR detection system. Referring to FIG. 5 again, the extracting pulse is applied to an open-collector output TTL gate TG (for example, that sold under the trade name of SN7406) in each of the amplifiers 20 and 21, and, when the writing pulse is present, the input of the TTL gate TG is rendered null to ground the connection point between resistors  $R_3$  and  $R_4$  so as to extract the corresponding writing pulse part. As a result, the track offset  $\Delta TR$  is eliminated as shown in FIG. 3(f), and the stability of the TR servo system in the write mode can be greatly improved. Since, in this case, the quantity of reflected light is lowered by a proportion corresponding to the duty factor of the extracting pulse, the gain  $G_w$  of the amplifiers 18 and 19 in the write mode must be selected while taking the above fact into account. In FIG. 5, the TTL gate is used to extract the writing pulse parts. However, it is apparent that the effect is equivalent to that described above even when a sample/hold circuit including means such as an analog switch is used to hold the TR detection signal for a period of time corresponding to the pulse width of the writing pulse parts by application of the extracting pulse signal.

It will be understood from the foregoing description of the present invention that, in the write mode, writing pulse parts are extracted from the TR detection system for a period of time corresponding to the writing pulse width, so that the tracking servo performance can be greatly improved.

We claim:

1. An optical recording and reproducing apparatus comprising:

- light illuminating means for illuminating a light spot toward a recording medium;
- a detection system detecting light reflected from said recording medium to derive an electrical signal from said reflected light;
- an information processing circuit modulating the intensity of said light spot according to writing pulses to record information on said recording medium and using said electrical signal to reproduce information from said recording medium; and
- a tracking servo circuit carrying out a tracking servo operation on the basis of said electrical signal, said tracking servo circuit including an extracting circuit for extracting time-wise portions of said electrical signal, and means for applying extracting pulses having a pulse width [at least equal to] greater than the writing pulse width to said extracting circuit so

6

that time-wise portions of said electrical signal corresponding to the writing pulses during recording of information are not utilized for the tracking servo operation when the extracting pulses are present.

2. An optical recording and reproducing apparatus according to claim 1, wherein the pulse width of said extracting pulses applied to said extracting circuit is determined while taking into account the frequency characteristics of a tracking servo signal of said tracking servo circuit.

3. An optical recording and reproducing apparatus according to claim 1, wherein said tracking servo circuit includes a gain change-over circuit for changing over the gain of said tracking servo circuit depending on whether information is to be recorded or reproduced.

4. An optical recording and reproducing apparatus according to claim 1, wherein the means for applying extracting pulses applies the extracting pulses to the extracting circuit at a timing corresponding to a timing of the writing pulses, the tracking servo circuit including a tracking servo loop with a variable gain.

5. An optical disk apparatus comprising:

- a light source;
- an optical system guiding light emitted from said light source toward a recording medium on a disk plate;
- an information detection circuit separating light reflected from said recording medium on said disk plate from said optical system and photoelectrically converting said reflected light into an electrical signal;
- an information processing circuit recording and reproducing information on and from said recording medium on said disk plate; and
- means connected to said information detection circuit for applying extracting pulses having a pulse width [at least equal to] greater than that of writing pulses for recording of information to said information detection circuit so that time-wise portions of said electrical signal corresponding to the writing pulses during recording of information are not utilized for a tracking servo operation of a tracking servo circuit when the extracting pulses are present.

6. An optical disk apparatus according to claim 5, wherein the pulse width of said extracting pulses applied to said information detection circuit is determined while taking into account the frequency characteristics of a tracking servo signal of said tracking servo circuit.

7. An optical disk apparatus according to claim 5, wherein the means for applying extracting pulses applies the extracting pulses to said information detection circuit at a timing corresponding to a timing of the writing pulses, the tracking servo circuit including a tracking servo loop with a variable gain.

8. A method of optical recording and reproduction including the steps of directing a light spot toward a recording medium, modulating the intensity of said light spot according to writing pulses to record information on said recording medium, and detecting light reflected from said recording medium to reproduce information from said recording medium, said method comprising the step of carrying out a tracking servo operation on the basis of an electrical signal detected from said reflected light and including applying extracting pulses having a pulse width [at least equal to] greater than that of said writing pulses so that time-wise portions of said electrical signal corresponding to the writing pulses